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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/648,789

08/27/2003

Yoshiro Mikami

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7590

11/25/2005

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EXAMINER

HOLTON, STEVEN E

ART UNIT

PAPER NUMBER

2673

DATE MAILED: 11/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/648,789	Applicant(s) MIKAMI ET AL.	
	Examiner Steven E. Holton	Art Unit 2673	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 August 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 August 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

by

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Drawings

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: Fig. 13, element 93. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

3. The disclosure is objected to because of the following informalities:
Page 11, lines 6 and 24, the use of the abbreviation LSI. The Examiner notes that the abbreviation LSI should be defined out to avoid confusion as to the meaning.
Appropriate correction is required.

Claim Objections

4. Claim 5 is objected to because of the following informalities: the phrase 'said driving circuit is stopped to stop rewriting' (lines 28-29); and 'rewriting of a screen' (line 32). Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 1-12 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Independent claims 1-8 recite the display unit possessing pixels "capable of changing brightness, reflectance, transmittance and colors". However, the embodiment of the invention as discussed uses a "reflective liquid crystal display panel (page 10, lines 7-8). Such a display device possesses pixels that are able to alter the reflectance of the pixel, but does not deal with the brightness, transmittance or color of each pixel. Changing the brightness of the pixel would imply an electroluminescent display; transmittance would imply a backlit display of some type, and color is not discussed

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within the detailed description of the device as part of the invention. Color is stated in the summary of the invention, which is merely a restatement of the claim language.

As none of the embodiments of utilizing an electroluminescent display, a backlit display requiring a backlight apparatus, nor a multi-color display are discussed within the detailed description they are not enabled by the specification. The Examiner notes that these various types of displays are known in the art, but in a low power display system such as described a luminescent or backlit display system would provide a much higher amount of power drain on the system and would greatly affect the devices operation.

Claim 7 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Claim 7 recites the limitation "a function to convert the input display data into a data corresponding to a pixel density lower than the display area". The specification does not recite such a function as part of the data buffer. Also, the specification does not discuss 'pixel density' or converting an image between different pixel densities.

Claim 8 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Claim 8 recites the limitation "said control circuit controls the driving circuit by changing an amplitude of a signal voltage of the driving circuit to make it smaller than when the

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amount of stored electric power is larger than the prescribed amount, thereby displaying at plural levels of brightness". If the display is a reflective liquid crystal display, then the amount of reflected light is merely based on how often the pixels are directed to reflect light and how much light is shown on the display; the amount of driving voltage to the pixels will not affect the brightness of the display. Further, the specification does not discuss the changing of the amplitude of the signal voltage of the driving circuit to provide plural levels of brightness from the display. The different levels of detected voltage are shown to determine if no change, a still picture, or a moving picture are shown to the screen. The level of brightness of the display seems to be inherent as encoded with the image data transmitted to the display and operates at one standard level of brightness.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claim 6 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 6 recites the limitation "a part of display on the display area is rewritten when the amount of stored electric power detected by said stored power detecting circuit is small, a large portion is rewritten when the amount of stored electric power is large, and the entire screen is rewritten when the amount of stored electric power is large". This limitation lacks definition of 'small' and 'large' levels of stored electric

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power. Further, the 'large portion' is not defined as to what the large portion is being rewritten, but the Examiner assumes that it is intended to mean a large portion of the display. Also, if both a large portion of the display and the entire screen are rewritten when the level of stored electric power is 'large' why is there distinction between the two? A large portion of the screen would be fully encompassed by the entire screen, so the levels of 'large' may be different or the same, but it is unclear.

Claim 12 recites the limitation "pixel circuit" in second line of the claim. There is insufficient antecedent basis for this limitation in the claim. Also, none of the claims that claim 12 depends on recite a 'pixel circuit'.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1-5, 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Munyan (USPN: 5761485) in view of Luck (USPN: 5661349).

The Examiner notes that many of the limitations of claims 1-8 are similar and therefore the common limitations between the claims are only discussed in the rejection of claim 1. The arguments for those common limitations can be used for all of claims 1-6.

Regarding claim 1, Munyan discloses, "A display device comprising a power supply unit for supplying power (Fig. 3, element 342; col. 13, lines 26-36), a display unit for displaying an image (Fig. 3, elements 320 and 330; col. 13, line 50 – col. 14, line 2), a data input circuit (Fig. 3, element 350; col. 14, lines 33-51) for inputting display data corresponding to an image to be displayed on the display unit and a control circuit (Fig. 3, element 380; col. 13, lines 8-25), wherein: ...

said display unit includes a matrix display area, in which a large number of pixels having an optical modulating function capable of changing brightness, a reflectance, a transmittance and colors by a voltage or a current are arranged in a matrix, and a driving circuit (Fig. 3, element 370; col. 13, line 50 – col. 14, line 2) including a sequence circuit for driving the matrix display area (col. 11, lines 48-53; Munyan discusses using an LCD or similar active matrix display with pixels, it is well-known in the art to provide pixels in a matrix arrangement in a display device and those pixels can be used to control brightness, reflectance, transmittance or color depending on the type of display);

an input of said data input circuit is connected to a data input terminal, and an output is connected to said driving circuit of the display unit (Fig. 3, element 350, the input terminal being the connection via antenna to the data network, the output being connected through the microprocessor to the display driver (Fig. 3, element 370)).

However, Munyan does not expressly disclose a power supply unit that stores power over time until enough power to provide operation or a control circuit that operates the display when enough stored power is detected. Munyan also does not

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expressly disclose a pixel memory within the pixels to store information for display by each pixel, but such memories within pixels are common within LCD and other active matrix displays and would be obvious and inherent within a standard LCD display.

Luck discloses a power system for an electronic device that accumulates energy over time until enough energy is accumulated for operation of the device (col. 17, lines 10-30). The power system of Luck includes "a power supply which varies a power supply ability with time, switches a plurality of different power supply abilities or has average produced power lower than average power required to rewrite one screen (Fig. 3, elements PVM1 and PVM2; col. 30, lines 19-22)" and "a power storage unit which as capacity of stored electric power (Fig. 3, element ENERGY STORAGE; col. 31, lines 23-63)". Luck also discloses control circuits that detect when the stored power is at a specific level and then provides operation of the device (Fig. 3, elements UPPER MONITOR 1 and 2; col. 31, lines 33-51).

At the time of the invention it would have been obvious for one skilled in the art to combine Munyan and Luck to produce a handheld display that accumulates external energy until enough energy is accumulated to operate the display device. The motivation for doing so would be to provide a device able "to operate in an adverse power environment... when one or more power sources to the electrical system are at times individually and/or collectively unavailable and/or inadequate to meet either the instantaneous or sustaining power demands of the system (Luck, col. 4, lines 32-37)". By providing a power source of Luck that accumulates power over time and produces a signal when an acceptable levels of stored power are reached the display device of

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Munyan could then be operated using the stored energy. Thus, the combination of Munyan and Luck produce a device as specified by claim 1.

Regarding claim 2, this claim possesses the limitations, "a data buffer for storing the input display data"; "said data buffer includes a frame memory for storing display data and a data accumulation detecting circuit for detecting an accumulated amount of display data, its input is connected to a data input terminal, and its output is connected to said driving circuit of said driving unit"; and "said control circuit controls the driving circuit to rewrite the display content of the display unit in response to a positive logical product of a stored power detecting signal indicative of a detected amount of stored electric power not less than the average power required for at least rewriting of an image a screen from the stored power detecting circuit and a data accumulation detection signal indicative of the accumulation of electronic data for one image screen in said data buffer."

The Examiner takes Official Notice that it is well-known in the art to provide a data buffer that has frame memory for storing image information before sending the information to the display. Further it is well-known in the art to provide signals indicating when a frame memory or buffer has enough information to display a full screen and is ready to be sent to the display. This indication that a frame memory of buffer was ready to transmit data to the screen would be considered along with the power accumulation signal provided by the power supply disclosed by Luck in order to operate the display device. It would be obvious that some form of logic signal or software logic decision

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could be used to determine that conditions for operation had been met and the display operated.

Regarding claim 3, the Examiner notes that this claim only differs from claim 2 in the addition of the limitation of "rewrite input means for requesting a change in the display content of said display unit".

Munyan discloses icons on the touch screens of the device for changing the display information forward or backwards along with other commands for changing the display content are disclosed within the application (col. 8, lines 35-57). Such icons are input means that request the change of the display content of the display unit.

Regarding claim 4, the Examiner notes that the limitations of claim 4 only differ from the limitations of claim 1 by the limitations: "rewrite input means for requesting a change in the display content of the display unit" and "...controls the driving circuit to rewrite the screen continuously in response to output of a stored power detecting signal indicative of a detected amount of stored electric power not less than the average power required to rewrite the screen continuously by said stored power detecting circuit so as to repeatedly rewrite the display content of the display unit to display a moving picture on said display unit".

Munyan discloses icons on the touch screens of the device for changing the display information forward or backwards along with other commands for changing the display content are disclosed within the application (col. 8, lines 35-57). Such icons are input means that request the change of the display content of the display unit. Munyan also discloses using the display device to provide video clips and other moving displays

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(col. 10, lines 63-67). Such video clips would require continuous rewriting of the screen to provide a movie.

Luck also discloses the power supply system has the ability "to 'come alive', and to operate at relatively high, or continuous, duty cycles in order to perform significant work (col. 9, lines 65-67)." Thus, using the power system of Luck it would be possible to check if stored energy is enough to provide for continuous rewriting of the screen or other operations requiring high levels of power for the display device. Thus, it would be possible to design the power system so that the display device operates with single screen rewriting and continuous screen rewriting depending on the level of power stored by the device.

Regarding claim 5, the limitations of this claim are similar in scope to that of claim 4. The difference being that limitations of claim 5, provide the details of "said driving circuit is stopped to stop rewriting the screen of the display unit when a stored power detection signal having detected an amount of stored electric power not more than the average power required for at least rewriting of a screen of the display unit is output from the stored power detecting circuit;

Said driving circuit is controlled to rewrite a still screen so to rewrite the screen by rewriting a pixel display content when a stored power detecting signal indicative of a detected amount of stored electric power not less than the average power required for at least rewriting of a screen of the display unit is output from the stored power detecting circuit". The Examiner notes that this limitation merely states that when not enough power is stored the display is not rewritten and when enough power is detected the

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display is rewritten for a single screen. This method of operation is the same as disclosed in claim 4 as "said control circuit controls the driving circuit so as to rewrite a still screen by rewriting a pixel display content when said stored power detecting circuit outputs a stored power detecting signal indicative of a detected amount of stored electric power not less than the average power required for at least rewriting of an image screen." If the display is operated to rewrite when enough power has been stored, then it would be operated not to display if not enough power has been stored. Thus, the arguments of claim 4 can be applied to claim 5.

Regarding claim 9, Luck discloses using a solar cell as input system for power for the power supply (Fig. 3, elements PVM1 and PVM2; col. 30, lines 19-22).

8. Claims 10-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Munyan in view of Luck as applied to claim 9 above, and further in view of Doane et al. (USPN: 6518944), hereinafter Doane.

Regarding claims 10 and 11, as discussed above, the combination of Munyan and Luck disclose all of the limitations except, "wherein the solar cell is an organic thin-film solar cell formed on the same substrate as the display unit is formed". Doane discloses an embodiment of a combined display and solar cell where "a substrate or base material are integrated into a single unit such a unit may advantageously function as both the solar panel assembly and the second or back substrate of the display thereby eliminating the need for a back substrate separate from the solar panel assembly (col. 12, line 64 – col. 13, line 29)." The Examiner notes that Doane

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discusses that the solar cell "may be silicon or other types of material such as organic solar cell material (col. 13, lines 11-12)."

Thus, it would have been obvious to one skilled in the art to combine the teachings of Munyan, Luck and Doane to produce a device as specified in claims 10 and 11. The motivation for doing so would have been to eliminate "the need for a back substrate from the solar panel assembly (Doane, col. 13, lines 1-2)". The combining of a display unit with solar cell formed on the same substrate along with a power accumulating power supply as disclosed by Luck would produce the device as specified in claims 10 and 11.

Regarding claim 12, Doane mentions that a type of display able to be used with the solar cell and display combination device is one mentioned in an article titled "Amorphous Silicon Thin-Film Transistor Active-Matrix Reflective Cholesteric Liquid Crystal Display" (col. 2, lines 63-67). And the Examiner notes that it is well-known in the art to use thin-film transistors in many display devices to provide active-matrix displays.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Fukui et al. (USPN: 5657043) discloses a display system with an image data buffer with two frame memories.

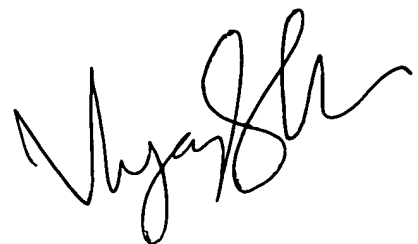
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10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven E. Holton whose telephone number is (571) 272-7903. The examiner can normally be reached on M-F 8:30-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bipin Shalwala can be reached on (571) 272-7681. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Steven E. Holton
November 21, 2005
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A handwritten signature in black ink, appearing to read 'Vijay Shankar', written in a cursive style.

**VIJAY SHANKAR
PRIMARY EXAMINER**